

ABSTRACT

The invention relates to a method for producing a coating (1) on a displaceable substrate (2) in a vacuum chamber (10) with the aid of a residual gas, by means of a sputtering device (3, 7), said coating (1) being formed from at least two constituents, whereby a sputtering material of the sputtering device (3, 7) constitutes at least one first constituent and a reactive component of the residual gas constitutes a second constituent. The method comprises the following steps: reactive deposition of a coating (1) on the substrate (2) by the addition of a reactive component, with a predetermined stoichiometric deficit of the reactive component in a zone of the sputtering device (3, 7); displacement of the substrate (2) with the deposited coating (1) into the vicinity of a plasma source (5), which is located in the vacuum chamber (10) at a predetermined distance from the sputtering device (3, 7); modification of the structure and/or stoichiometry of the coating (1) by the action of the plasma of the plasma source (5), preferably by the addition of a predetermined quantity of the reactive component, to reduce the optical loss of the coating (1). The invention also relates to a method for producing a multilayer coating with the aid of at least one coating device that can be reactively operated (3) and at least one reaction device (5) in a vacuum chamber (10). According to said method, a second coating is deposited on a first coating of at least one substrate (2) that can be displaced in relation to the coating device (3) or the reaction device (5), with the aid of the reactive component and the structure and/or stoichiometry of at least one coating is modified using the reaction device (5). The aim of the invention is to reduce the optical loss of the multilayer coating to below a predetermined value in a zone of the second coating adjoining the first coating. To achieve this, an interface is created with a thickness d_i and a value for the deficit of the reactive component DEF that is less than a value DEF_1 . The invention further relates to a device for producing coatings according to said methods, in addition to a coating and a multilayer coating produced according to the inventive method.